dominal aorta in which the intima became a soft, thickened and homogeneous layer which virtually overflowed the visceral and often the renal arteries as well. Thirty-eight patients have been operated upon. The conclusions from this experience were as follows:

- Grafts placed in an antegrade fashion and originating from the generally undiseased distal thoracic aorta (transabdominal approach) are hemodynamically more sound, and easy to apply.
- When both the celiac and superior mesenteric arteries are involved, grafts to the celiac alone will generally suffice to revascularize the distal branches of both arteries and relieve symptoms.
- Late failure is a function of the graft material. Long-term patency of Dacron® grafts was 6/6, arterial autographs 3/3 and saphenous vein grafts 1/6. Saphenous vein grafts are no longer used.
- Endarterectomy is an effective method for a more complete operation. When done through a thoraco-retroperitoneal abdominal approach and a trapdoor aortotomy, removal of a sleeve of aortic intima produces a specimen that includes the orifice lesions in the visceral arteries and the renal arteries also if they are involved. This approach facilitated coincident aorta-iliac reconstruction which was indicated in eight patients.

EDWIN J. WYLIE, MD

REFERENCES

Stoney RJ, Ehrenfeld WK, Wylie EJ: Revascularization methods in chronic visceral ischemia caused by atherosclerosis. Ann Surg 186:468-478, Oct 1977

Stemmer EA, Connolly JE: Mesenteric vascular insufficiency—Identification and management. Calif Med 118:18-29, Mar 1973

Atheroembolism

ALTHOUGH THE MAJORITY of thromboemboli are cardiac in origin, detachment of loose atheromatous aggregates from a major artery may be another serious yet correctable source of embolization. Though atheroembolism was first recognized in 1862, its importance has not been appreciated until recently. Dissemination of grumous material from ulcerated plaques at the carotid bifurcation is now well established as a cause of transient ischemic attacks or stroke and carotid endarterectomy for the condition is being done with increasing frequency.

Cases of atheroemboli to the abdominal viscera including the kidneys, pancreas, stomach or bowel have been recorded in the literature, but as yet surgical remedial measures in such cases are rarely attempted.

The symptoms of atheroemboli to the lower extremities are often insidious and may at times elude the most astute diagnostician. Myalgia, aching and cramps, often intermittent in nature, may be the first symptoms. Eventually, gangrene of the toes develops despite the presence of ankle pulses. Successful management of patients involves clinical awareness of the entity followed by angiographic confirmation and prompt endarterectomy or graft replacement of the diseased aorta. Arteriograms typically show ulcerated disease or plaquing of the aorta with sharp angiographic blockage of digital vessels. Atheroembolism may also be seen in the upper extremity but with less frequency.

JACK H. M. KWAAN, MD
JOHN E. CONNOLLY, MD

REFERENCES

Kwaan JH, Molen RV, Stemmer EA, et al: Peripheral embolism resulting from unsuspected atheromatous aortic plaques. Surgery 78:583-588, Nov 1975

Kwaan JH, Connolly JE: Peripheral atheroembolism: An enigma. Arch Surg 112:987-990, Aug 1977

Banis JC Jr, Rich N, Whelan TJ Jr: Ischemia of the upper extremity due to noncardiac emboli. Am J Surg 134:131-139, Jul 1977

Management of Hepatic Trauma

MAJOR ADVANCES in safety of hepatic resection have been based upon new technical, anatomical and metabolic knowledge. Nevertheless, mortality has remained high when injuries have been associated with major vascular injury and when hepatic lobectomy has been required. The additive effects of lobectomy, a formidable procedure, upon existing preoperative and operative hypovolemia, hypotension and associated injuries, have often resulted in death.

There has been renewed interest in resections of lesser magnitude but adequate to debride damaged liver and to control bleeding. Even extensive lacerations and explosive injuries caused by abrupt deceleration can often be successfully managed by the piecemeal removal of devitalized hepatic fragments and careful ligation of vessels and ducts, followed by adequate drainage.

Rapid fluid resuscitation and complete evaluation should be followed by prompt surgical exploration of the abdomen with early extension of the incision into the chest by partial splitting of the sternum, if necessary, to provide sufficient exposure of bleeding sites and to control them.

Initial packing often controls bleeding temporarily for orderly assessment of the location and extent of bleeding. Fortunately, most liver injuries are minor and respond to simple suture methods and adequate drainage.

Clamping of the portal triad (Pringle maneuver), isolation of the intrapericardial or abdominal vena cava, subdiaphragmatic aortic clamping and intracaval shunts are methods sometimes useful in gaining temporary hemostasis. Under certain conditions even prolonged packing with subsequent removal has been useful in the surgical armamentarium.

The place of hepatic artery ligation for the control of hemorrhage has not been settled. In Mays' experience, hepatic artery ligation has been uniformly well tolerated. Others report recurrent bleeding and hepatic dysfunction after its use. In selected patients, ligation should be given careful consideration as an alternative to major hepatic lobectomy.

In these cases careful supportive postoperative management directed to the prevention of multiple organ failure is required. DON R. MILLER, MD

REFERENCES

Balasegaram M: The surgical management of hepatic trauma. J Trauma 16:141-148, Feb 1960

Lucas CE, Ledgerwood AM: Prospective evaluation of hemostatic techniques for liver injuries. J Trauma 16:442-451, Jun 1976

Aaron S, Fulton RL, Mays ET: Selective ligation of the hepatic artery for trauma of the liver. Surg Gynecol Obstet 141:187-189, Aug 1975

Peritoneoscopy in Gastrointestinal Surgical Operation

PERITONEOSCOPY is being rediscovered by surgical gastroenterologists. Although widely used in Europe, and in this country by gynecologists, peritoneoscopy (laparoscopy) in gastrointestinal surgery is not widely appreciated.

Laparoscopy is the endoscopic examination of the peritoneal cavity and its contents after the induction of pneumoperitoneum. By visualization, indirect palpation and tissue biopsy studies, open laparotomy can be avoided in approximately 50 percent of patients for whom an operation has been indicated because of obscure diagnosis or possible intraabdominal trauma.

The potential application and benefits of peritoneoscopy are immediately apparent to practicing clinicians. These include elderly debilitated patients with suspected carcinomatosis; patients with fever of unknown origin, intraabdominal masses or jaundice of cryptic origin, and trauma victims with equivocal signs of intraabdominal injury—to name only a few.

Gastrointestinal surgeons have sometimes been reluctant to accept new modalities for diagnosis and treatment. In many ways this is a laudable posture at a time when the proliferation of new tests and therapies is escalating the cost of health care delivery without documented benefit to patients. In the experience of this author, however, peritoneoscopy can avoid many costly indirect diagnostic examinations and potentially hazardous operations in eldery and high-risk patients.

Competence in peritoneoscopy is now a part of the better training programs in gastrointestinal surgery. Practicing clinicians may wish to acquire training in these skills to explore their potential in their practices. L. DENBESTEN, MD

REFERENCES

Trujillo NP: Peritoneoscopy and guided biopsy in the diagnosis of intraabdominal disease. Gastroenterology 71:1083-1085, Dec 1976

Gazzaniga AB, Stanton WW, Bartlett RH: Laparoscopy in the diagnosis of blunt and penetrating injuries to the abdomen. Am J Surg 131:315-318, Mar 1976

The Continent Kock Ileostomy

THE CONTINENT INTERNAL ILEOSTOMY POUCH which was introduced in 1969 by Professor Kock is an evolutionary descendant of ileocystoplastics, done by Goodwin. It is best applied in patients with true mucosal ulcerative colitis. A patient with Crohn disease who has already had an ileostomy and has shown no recurrence of the disease over the period of many years, rarely becomes a candidate for the pouch. The pouch may be created as a secondary operation or as a primary operation. To form such a pouch at the time of the original ileostomy and colectomy adds at least another hour to the operative time. A depleted patient may have healing difficulty with the complex suture lines. In 60 percent of patients with colitis, the ultimate pathological diagnosis is Crohn disease. Since roughly half of these patients were diagnosed initially as having mucosal colitis, it is incumbent upon the surgeon to be absolutely certain that he is not operating on a patient with undiagnosed and untreated Crohn disease. Treatment of a recurrence of the disease in the pouch may cost the patient unnecessary bowel loss if fistulas and other complications ensue.